



Nonclassical TWG Issues

***GRNS Meeting: Washington, D.C.
February 5-6, 2002***

Issues

- ***Are the concepts in TWG 4 too selective?***
- ***Should we expand their set with a special search?***

Status of Nonclassical Concepts

- ***TWG 4 performed a large effort considering a wide variety of concepts***
- ***32 concepts gathered: 28 met basic Gen IV requirements***
- ***Full set shown on next slide***
- ***Concepts grouped into 5 primary concept sets***
 - ***Liquid Core Reactors***
 - ***Gas Core Reactors***
 - ***Non-Conventional Cooled Reactors***
 - ***Non-Convection Cooled Reactors***
 - ***Direct Energy Conversion Reactors***
- ***First 3 concept sets selected and narrowed for further consideration***
 - ***Molten Salt Core Reactor***
 - ***Gas Core Reactors***
 - ***Molten Salt Cooled AHTR***

Non-Classical Nuclear Energy Systems

LIQUID CORE REACTORS

Molten Salt Core Reactor (MSR) Concepts
Eutectic Metal Core Reactors
Multi-Component MSR Systems
Viability Evaluation for the Molten Salt Core Reactors

GAS CORE REACTORS

Coupled GCR/VCR-MHD Concept
Gas Core-Graphite Wall U-C-F System Concept
Mixed Vortex Flow UF₆ Gas Core Reactor Concept
Vortex Flow Gas Core Reactor Concept
Concept Viability Evaluation of Gas Core Reactors

NON-CONVENTIONAL COOLANT REACTORS

Modular, Molten-Salt-Cooled, Graphite-Matrix-Fuel
Advanced High Temperature
Reactor (AHTR)
Concept Viability Evaluation for the AHTR Concept
Organic Cooled Reactors (OCR)
Concept Viability Evaluation for Organic Cooled
Reactors
Metallic-Vapor Cooled Reactors (FSEGT)
Concept Viability Evaluation for FSEGT Reactors

NON-CONVECTION COOLED REACTORS

Solid Core, Solid State, and Heat-Pipe Cooled Reactors
Concept Viability Evaluation for Non-Convection Cooled
Reactors

ENERGY CONVERSION REACTORS

Quasi-Spherical Magnetic Cell (QSMC)
Fission Fragment Magnetic Collimator (FFMC)
Concept Viability Evaluation for Direct Energy Conversion
Reactors

Options for Expanding the Concepts

- ***Special Workshop***
 - *more cost, but could be held in 30-60 days*
 - *still requires time after for concept development*
 - *would have only limited participation*
- ***New, expanded Request for Information***
 - *less initial cost, could be held in 90 days*
 - *potentially greater participation*
 - *considerably increases efforts for TWG 4*
- ***Special emphasis in the NEER, NERI calls***
 - *requires waiting until the FY-03 calls*

Conclusion: Impractical to expand the effort.